

Marine Corps Air Station Tustin Data Quality Objectives IRP-12 (DRUM STORAGE AREA NO. 2)

Step 1 – Problem Statement

The soil at IRP-12 has demonstrated base impacts. The groundwater beneath sections of IRP-12 has been impacted by TCE (source unknown) and fuel oil (UST). Further investigation is needed to evaluate risk and remedial options if necessary.

DISCUSSION

Site History

IRP-12 (Exhibit 1) was reportedly used as a drum storage area from the mid 1960s until July 1975 (JMM 1988a). IRP-12 consists of three areas: south of Building 20B (reported to be approximately 5,000 square feet), north of Building 90 (reported to be approximately 2,500 square feet), and east of Building 90 (reported to be approximately 20,000 square feet). Waste liquids were reportedly stored in as many as 200 55-gallon drums on the south side of Building 20B. Some periodical storage activities were apparent in this storage area between aerial photograph years 1952 and 1981; however, the nature of the materials stored there is obscure. Solvents, crankcase oils, and hydraulic fluids were stored in two areas located north and east of Building 90, respectively. The area south of Building 20B is estimated to have received 660 to 880 gallons of crankcase oil and hydraulic fluid from the mid 1960s until the early 1970s. Between 1970 and 1975, approximately 880 gallons of assorted unidentified solvents, crankcase oil, and hydraulic fluid leaked onto the soil north of Building 90. Between 1975 and 1984 approximately 1,000 gallons of crankcase oil and hydraulic fluid reportedly leaked in the area east of Building 90. Exhibit 2 lists the products reportedly released at IRP-12 and their associated potential chemicals of concern (PCOCs). Former UST-90 is located between Building 90 and Copeland Road. This tank was removed by the Navy under CLEAN II CTO-032 during 1994 (SWDIV 1994a). Contamination (diesel fuel/heating oil) was identified both in the tank excavation and in three borings within 15 feet of the tank and its fuel pipe into Building 90.

Four AOCs (ST-21B, ST-21C, ST-21D, and ST-21F) were located within the boundary of the IRP. The four AOCs were used for temporary storage of hazardous waste and were operated by MALS-16. The storage areas for both AOCs consisted of a plastic liner and sandbags. All sites were demolished in 1991 and replaced with Unit 576 (ST-21A). Wastes stored at ST-21B and ST-21C included mercury, PD-680, JP-5, distilled petroleum, and cleaning compounds. Wastes stored in at ST-21D and ST-21F included oil, oily rags, and cleaning compounds.

Exhibit 1



Exhibit 2
Chemicals Suspected of Having Been Disposed of in IRP-12

Product	Potential Chemicals of Concern
Crankcase Oil	PAHs, Metals
Hydraulic Fluids	Glycidol, DEHP, Hydrocarbons
Solvents	Halohydrocarbons and BTEX
Fuel Oil (UST)	Aromatic, Hydrocarbons, PAHs

As of 1993 the site currently showed very little surface staining or signs of stressed vegetation. The drum storage areas are currently vacant except for abandoned building foundations within the fenced compound east of Building 90 (SWDIV 1993a). A site visit in 1994 conducted by Bechtel indicated that the area north of Building 90 is paved and a large portion of the AOC south of Building 20B is paved. Also portions of the area to the east of Building 90 were being used for what appeared to be product storage (55-gallon drums on pallets).

Geology and Hydrogeology

Four borings were drilled at IRP-12 during the SI (Exhibit 3). All four encountered a moist silty clay to approximately 15 to 20 feet bgs where a silty to clayey sand became evident. Free-flowing groundwater was encountered between 12 and 15 feet bgs. For three borings, the HydroPunch™ screened interval was between 20 and 30 feet. The sampling interval for Boring MT-12-4 was somewhat shallower at 15 to 20 feet. Groundwater flow direction is assumed to be south to southwest.

Potential Chemicals of Concern

The following is a synopsis of the results of the SI conducted in 1991. Exhibit 4 provides summary data for the chemicals found at IRP-12 during the SI. Exhibit 5 presents the contaminants detected during the SI.

Soil Investigation

Soil samples were generally taken at the 1-foot horizon. Hence, contamination at depth is not known. No heavy metals were detected in any of the samples above screening levels (PRGs). While there were some sample locations that had concentrations of some metals generally higher than the group as a whole (e.g., lead, 39.5 mg/kg, at MTS-12-10),

Exhibit 3

IRP-12 Drum Forage Area No. 2: Site Building Plan and ESI Sampling Locations

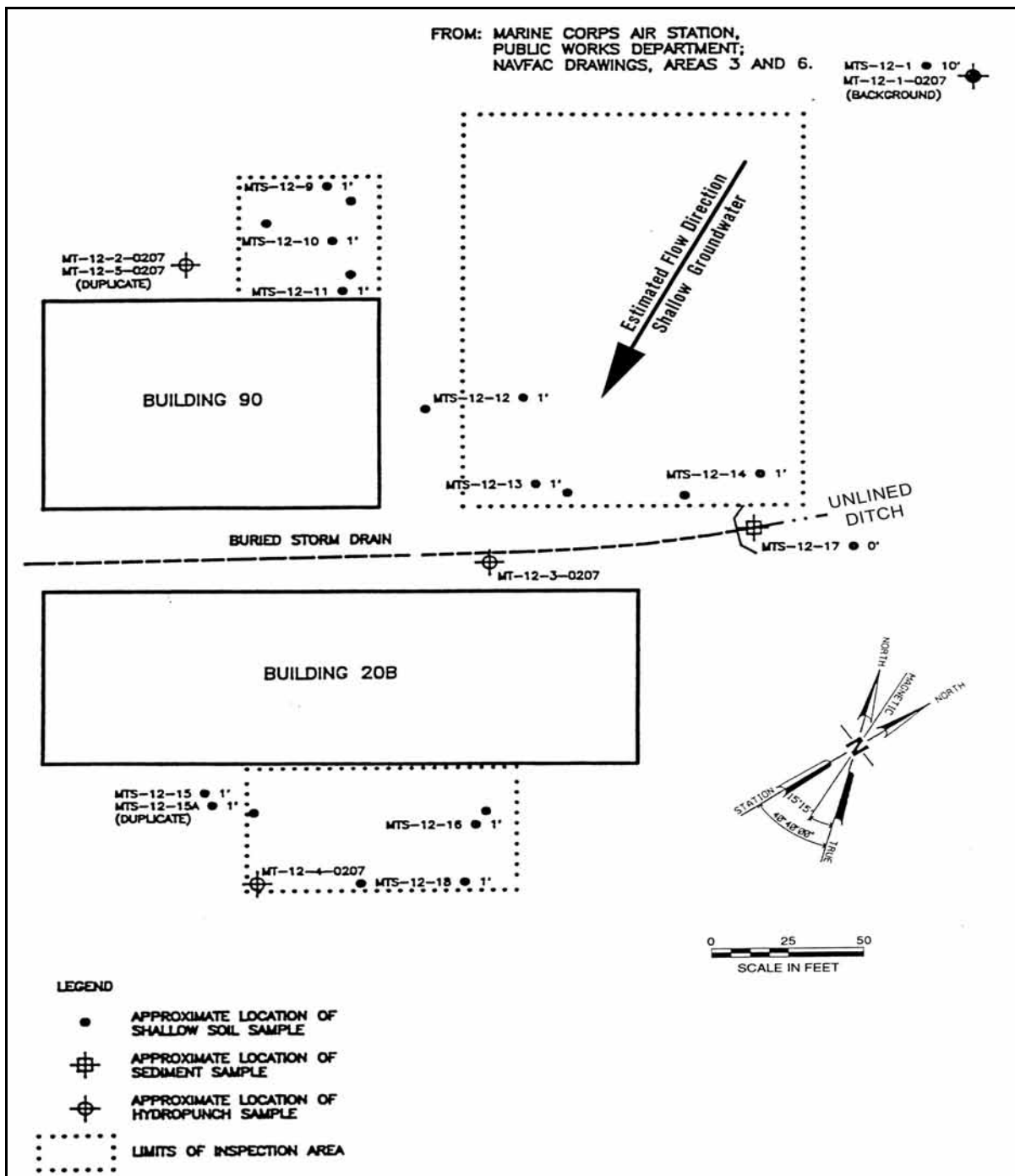


Exhibit 4
IRP-12 (Drum Storage Area No. 2)
Range of Chemical Concentrations Detected

Concentration											Regulatory Benchmarks		
PCOCs	Soil			Sample Location (Maximum)	Groundwater			Sample Location (Maximum)	CA Primary MCL (µg/L)	Fed. Primary MCL (µg/L)	Soil PRGs Residential (mg/kg)		
	Detection Limit	Minimum (mg/kg)	Maximum (mg/kg)		Detection Limit	Minimum (µg/L)	Maximum (µg/L)						
	Metals												
Arsenic	2	3.59	11.6	MTS-12-17@1'	4	ND	40.0	MT-12-2-0207	50	50	22/0.32		
Cadmium		ND	1.3		5	ND	5.25	MT-12-5-0207	10	5	38/9		
Chromium	4	6.8	20.91	MTS-12-1@10'	6		ND		50	100	210		
Copper	8	10.6	36.58	MTS-12-1@10	5		ND		-	1,300	2,800		
Lead	0.12	8.2	39.5	MTS-12-10@1'	1	1.4	2.44	MT-12-3-0207	50	15	400/130		
Mercury	0.12	0.15	0.21	MTS-12-14@1'	0.2		ND		2	2	23		
Nickel	3	7.2	18.7	MTS-12-11@1'	12	12.8	16.57	MT-12-5-0207	-	100	1,500/150		
Selenium					3	79.99	377.1	MT-12-5-0207	10	50	380		
Zinc	28	39.5	94.14	MTS-12-1@10	2		ND		-	-	23,000		
Cyanide		ND	1.4		10	10.8	19.9	MT-12-5-0207	-	200	-		
Halogenated VOCs													
Methylene Chloride	0.03	0.031	0.068	MTS-12-10@1'	10	44	71	MT-12-1-0207	-	100	11		

Exhibit 4 (Continued)
IRP-12 (Drum Storage Area No. 2)
Range of Chemical Concentrations Detected

Concentration										Regulatory Benchmarks		
PCOCs	Soil			Sample Location (Maximum)	Groundwater			Sample Location (Maximum)	CA Primary MCL (µg/L)	Fed. Primary MCL (µg/L)	Soil PRGs Residential (mg/kg)	
	Detection Limit	Minimum (mg/kg)	Maximum (mg/kg)		Detection Limit	Minimum (µg/L)	Maximum (µg/L)					
	Nonhalogenated VOCs											
	Acetone	0.035	0.036	0.039	MTS-12-10@1'					–	–	2,000
Nonhalogenated SVOCs												
Bis(2-ethylhexyl)phthalate	0.39	ND	0.6	MTS-12-10@1'					4	6	32	
Pesticides												
4,4-DDT	0.016	0.02	0.33	MTS-12-14@1'					–	–	1.3	
4,4-DDD	0.016	0.018	0.16	MTS-12-14@1'					–	–	1.9	
4,4-DDE	0.016	0.59	0.59	MTS-12-14@1'					–	–	1.3	
TPH												
TPH (JP-5)	10	ND	520	MTS-12-1@10					–	–	–	
TRPH	25	27	730	MTS-12-11@1'					–	–	–	

Acronyms:

DDD	–	dichlorodiphenyldichloroethane
DDE	–	dichlorodiphenyldichloroethene
DDT	–	dichlorodiphenyltrichloroethane
IRP	–	Installation Restoration Program
MCL	–	maximum contaminant level
PCOCs	–	potential contaminants of concern
PRGs	–	preliminary remediation goals
SVOCs	–	semivolatile organic compounds
SWDIV	–	Southwest Division Naval Facilities Engineering Command
TPH	–	total petroleum hydrocarbons
TRPH	–	total recoverable petroleum hydrocarbons
VOCs	–	volatile organic compounds